



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NATIONAL EXPOSURE RESEARCH LABORATORY
HUMAN EXPOSURE & ATMOSPHERIC SCIENCES DIVISION (MD-46)
Research Triangle Park, NC 27711
919-541-2622

Office of
Research and Development

LIST OF DESIGNATED REFERENCE AND EQUIVALENT METHODS

Issue Date: March 24, 2000
(www.epa.gov/ttn/amtic/criteria.html)

These methods for measuring ambient concentrations of specified air pollutants have been designated as "reference methods" or "equivalent methods" in accordance with Title 40, Part 53 of the Code of Federal Regulations (40 CFR Part 53). Subject to any limitations (e.g., operating range or temperature range) specified in the applicable designation, each method is acceptable for use in state or local air quality surveillance systems under 40 CFR Part 58 unless the applicable designation is subsequently canceled. Automated methods for pollutants other than PM₁₀ are acceptable for use only at shelter temperatures between 20EC and 30EC and line voltages between 105 and 125 volts unless wider limits are specified in the method description.

Prospective users of the methods listed should note (1) that each method must be used in strict accordance with its associated operation or instruction manual and with applicable quality assurance procedures, and (2) that modification of a method by its vendor or user may cause the pertinent designation to be inapplicable to the method as modified. (See Section 2.8 of Appendix C, 40 CFR Part 58 for approval of modifications to any of these methods by users.)

Further information concerning particular designations may be found in the *Federal Register* notice cited for each method or by writing to the National Exposure Research Laboratory, Human Exposure and Atmospheric Sciences Division (MD-46), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. Technical information concerning the methods should be obtained by contacting the source listed for each method. Source addresses are listed at the end of the listing of methods, except for the addresses for lead method sources, which are given with the method. New analyzers or PM₁₀ samplers sold as reference or equivalent methods must carry a label or sticker identifying them as designated methods. For analyzers or PM₁₀ samplers sold prior to the designation of a method with the same or similar model number, the model number does not necessarily identify an analyzer or sampler as a designated method. Consult the manufacturer or seller to determine if a previously sold analyzer or sampler can be considered a designated method or if it can be upgraded to designation status. Analyzer users who experience operational or other difficulties with a designated analyzer or sampler and are unable to resolve the problem directly with the instrument manufacturer may contact EPA (preferably in writing) at the above address for assistance.

This list will be revised as necessary to reflect any new designations or any cancellation of a designation currently in effect. The most current revision of the list will be available for inspection at EPA's Regional Offices, and copies may be obtained by writing to the National Exposure Research Laboratory at the address specified above.

Most Recent Designations

| | |
|---|------------------|
| DKK Corp. Model GUX-113E U. V. Ozone Analyzer | March 2, 2000 |
| DKK Corp. Model GFS-112E U.V. Fluorescence SO ₂ Analyzer | January 18, 2000 |
| Andersen RAAS10-100, RAAS10-200, RAAS10-300 PM ₁₀ Samplers | June 23, 1999 |
| Rupprecht & Patashnick Partisol® Model 2000 PM-2.5 Audit Sampler | April 19, 1999 |
| Andersen Model RAAS2.5-200 PM2.5 Audit Air Sampler | March 11, 1999 |

LEAD

Reference Method for Lead*Manual Reference Method: 40 CFR Part 50, Appendix G*

Reference Method for the Determination of Lead in Suspended Particulate Matter Collected from Ambient Air.

*[Federal Register: Vol. 43, page 46258, 10/05/78]***Energy-Dispersive X-Ray Fluorescence Spectrometry (TNRCC)***Manual Equivalent Method: EQL-0783-058*

"Determination of Lead Concentration in Ambient Particulate Matter by Energy-Dispersive X-Ray Fluorescence Spectrometry (Texas Natural Resource Conservation Commission)" Texas Natural Resource Conservation Commission, P.O. Box 13087, Austin, TX 78711-3087.

*[Federal Register: Vol. 48, page 29742, 06/28/83]***Energy-Dispersive X-Ray Fluorescence Spectrometry (NEA, Inc.)***Manual Equivalent Method: EQL-0589-072*

"Determination of Lead Concentration in Ambient Particulate Matter by Energy-Dispersive X-Ray Fluorescence Spectrometry (NEA, Inc.)" Nuclear Environmental Analysis, Inc., Suite 260, 10950 SW 5th Street, Beaverton, OR 97005.

*[Federal Register: Vol. 54, page 20193, 05/10/89]***Flame Atomic Absorption Spectrometry***Manual Equivalent Method: EQL-0380-043*"Determination of Lead Concentration in Ambient Particulate Matter by Flame Atomic Absorption Spectrometry Following Ultrasonic Extraction with Heated HNO₃-HCl"*Federal Register: Vol. 45, page 14648, 03/06/80]***Flameless Atomic Absorption Spectrometry (EPA/RTP, N.C.)***Manual Equivalent Method: EQL-0380-044*

"Determination of Lead Concentration in Ambient Particulate Matter by Flameless Atomic Absorption Spectrometry (EPA/RTP, N.C.)"

*[Federal Register: Vol. 45, page 14648, 03/06/80]***Flameless (Graphite Furnace) Atomic Absorption (Houston, Texas)***Manual Equivalent Method: EQL-0895-107*

"Determination of Lead Concentration in Ambient Particulate Matter by Flameless (Graphite Furnace) Atomic Absorption (City of Houston, Texas)." Health and Human Services Department, Environmental Chemistry Service, 1115 S. Braeswood, Houston, TX 77030.

*[Federal Register: Vol. 60, page 39383, 08/02/95]***Flameless Atomic Absorption Spectrometry (Omaha)***Manual Equivalent Method: EQL-0785-059*

"Determination of Lead Concentration in Ambient Particulate Matter by Flameless Atomic Absorption Spectrometry (Omaha-Douglas County Health Department)" Omaha-Douglas County Health Department, 1819 Farnam Street, Omaha, NE 68183

*[Federal Register: Vol. 50, page 37909, 09/18/85]***Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Doe Run)***Manual Equivalent Method: EQL-0196-113*

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Doe Run Co.)" Doe Run Company, Smelting Division, 881 Main Street Herculaneum, MO 63048

*[Federal Register: Vol. 61, page 11404, 03/20/96]***Inductively Coupled Argon Plasma-Optical Emission Spectrometry (EPA/RTP)***Manual Equivalent Method: EQL-0380-045*

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (EPA/RTP, N.C.)"

*[Federal Register: Vol. 45, page 14648, 03/06/80]***Inductively Coupled Argon Plasma-Optical Emission Spectrometry (IL)***Manual Equivalent Method: EQL-1193-094*

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (State of Illinois)." State of Illinois, Environmental Protection Agency, Champaign Inorganic Laboratory, 2120 South First Street, Champaign, IL 61820

*[Federal Register: Vol. 58, page 61902, 11/23/93]***Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Kansas)***Manual Equivalent Method: EQL-0592-085*

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (State of Kansas)" State of Kansas, Department of Health and Environment, Forbes Field, Building 740, Topeka, KS 66620-0001.

*[Federal Register: Vol. 57, page 20823, 05/15/92]***Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Montana)***Manual Equivalent Method: EQL-0483-057*

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (State of Montana)". State of Montana, Department of Health and Environmental Sciences, Cogswell Building, Helena, MT 59620.

*[Federal Register: Vol. 48, page 14748, 04/05/83]***Inductively Coupled Argon Plasma-Optical Emission Spectrometry (NETI)***Manual Equivalent Method: EQL-1188-069*

LEAD

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Northern Engineering and Testing, Inc.)" Northern Engineering and Testing, Inc., P.O. Box 30615, Billings, MT 59107.
[Federal Register: Vol. 53, page 44947, 11/07/88]

Inductively Coupled Argon Plasma-Optical Emission Spectrometry (NH)

Manual Equivalent Method: **EQL-1290-080**

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (State of New Hampshire)" State of New Hampshire, Department of Environmental Services, Laboratory Service Unit, 6 Hazen Drive (P.O. Box 95), Concord, NH 03302-0095.
[Federal Register: Vol. 55, page 49119, 11/26/90]

Inductively Coupled Argon Plasma-Optical Emission Spectrometry (PA)

Manual Equivalent Method: **EQL-0592-086**

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Commonwealth of Pennsylvania)" Commonwealth of Pennsylvania, Department of Environmental Resources, P.O. Box 2357, Harrisburg, PA 17105-2357.
[Federal Register: Vol. 57, page 20823, 05/15/92]

Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Pima, AZ)

Manual Equivalent Method: **EQL-0995-109**

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Pima County, Arizona)." Pima County, Wastewater Management Department, 201 North Stone Avenue, Tucson, Arizona 85701-1207.
[Federal Register: Vol. 60, page 54684, 10/25/95]

Inductively Coupled Argon Plasma-Mass Spectrometry (Pima Co., AZ)

Manual Equivalent Method: **EQL-0995-110**

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Plasma-Mass Spectrometry (Pima County, Arizona)." Pima County, Wastewater Management Department, 201 North Stone Avenue, Tucson, Arizona 85701-1207.
[Federal Register: Vol. 60, page 54684, 10/25/95]

Inductively Coupled Argon Plasma-Optical Emission Spectrometry (RI)

Manual Equivalent Method: **EQL-0888-068**

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (State of Rhode Island)," State of Rhode Island Department of Health, Air Pollution Laboratory, 50 Orms Street, Providence, RI 02904
[Federal Register: Vol. 53, page 30866, 08/16/88]

Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Silver Valley)

Manual Equivalent Method: **EQL-1288-070**

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (Silver Valley Laboratories)" Silver Valley Laboratories, Inc., P.O. Box 929, Kellogg, ID 83837.
[Federal Register: Vol. 53, page 48974, 12/05/88]

Inductively Coupled Argon Plasma-Optical Emission Spectrometry (WV)

Manual Equivalent Method: **EQL-0694-096**

"Determination of Lead Concentration in Ambient Particulate Matter by Inductively Coupled Argon Plasma-Optical Emission Spectrometry (State of West Virginia)." State of West Virginia, Department of Commerce, Labor and Environmental Resources, Division of Environmental Protection, 1558 Washington Street East, Charleston, WV 25311-2599
[Federal Register: Vol. 59, page 29429, 06/07/94]

Wavelength Dispersive X-Ray Fluorescence Spectrometry (CA)

Manual Equivalent Method: **EQL-0581-052**

"Determination of Lead Concentration in Ambient Particulate Matter by Wavelength Dispersive X-Ray Fluorescence Spectrometry" California Department of Health Services, Air & Industrial Hygiene Laboratory, 2151 Berkeley Way, Berkeley, CA 94704.
[Federal Register: Vol. 46, page 29986, 06/04/81]

NOTES

¹ Users should be aware that designation of this analyzer for operation on ranges less than the range specified in the performance specifications for this analyzer (40 CFR 53, Subpart B) is based on meeting the same absolute performance specifications required for the specified range. Thus, designation of these lower ranges does not imply commensurably better performance than that obtained on the specified range.

² This analyzer is approved for use, with proper factory configuration, on either 50 or 60 Hertz line frequency and nominal power line voltages of 115 Vac and 220 Vac.

Sources or Contacts for Designated Reference and Equivalent Methods

ABB Process Analytics
P.O. Box 831
Lewisburg, WV 24901
(304) 647-4358

Advanced Pollution
Instrumentation, Inc.
6565 Nancy Ridge Drive
San Diego, CA 92121-2251
(619) 657-9800

Andersen Instruments
500 Technology Court
Smyrna, GA 30082-9211
(800) 241-6898

ASARCO Incorporated
3422 South 700 West
Salt Lake City, UT 84119
(801) 262-2459

Beckman Instruments, Inc.
Process Instruments Division
2500 Harbor Blvd.
Fullerton, CA 92634
(714) 871-4848

Bendix
[Refer to ABB Process Analytics]

BGI Incorporated
58 Guinan Street
Waltham, MA 02154

Columbia Scientific Industries
11950 Jollyville Road
Austin, TX 78759
(800) 531-5003

Combustion Engineering
[Refer to ABB Process Analytics]

Dasibi Environmental Corp.
506 Paula Avenue
Glendale, CA 91201
(818) 247-7601

DKK Corporation
4-13-14 Kichijoji Kitamachi,
Musashino-shi
Tokyo, 180, Japan

Environnement S.A
111, bd Robespierre
78300 Poissy, France
Instruments also available from:
Altech/Environnement U.S.A.
2623 Kaneville Court
Geneva, IL 60134
(630) 262- 4400
rbrown@altechusa.com

Environics, Inc.
69 Industrial Park Rd. E.
Tolland, CT 06084-2805
(203) 429-0077

Graseby GMW
[Refer to Andersen Instruments]

Horiba Instruments Incorporated
17671 Armstrong Avenue
Irvine, CA 92714
(800) 446-7422

Lear Siegler
[Refer to Monitor Labs, Inc.]

Commonwealth of Massachusetts
Department of Environmental
Quality Engineering
Tewksbury, MA 01876

Met One Instruments, Inc.
1600 Washington Blvd.
Grants Pass, OR 97526
(541) 471-7111
metone@metone.com

McMillan
[Refer to Columbia Scientific Industries]

Mine Safety Appliances
600 Penn Center Blvd.
Pittsburgh, PA 15235-5810
(412) 273-5101

Monitor Labs, Inc.
74 Inverness Drive
Englewood, CO 80112-5189
(800) 422-1499

Opsis AB, Furulund, Sweden
Instruments also available from:
Opsis, Inc.
146-148 Sound Beach Avenue
Old Greenwich, CT 06870
(203) 698-1810

State of Oregon
Department of Environmental Quality
Air Quality Division
811 S.W. Sixth Avenue
Portland, OR 97204

PCI Ozone Corp.
One Fairfield Crescent
West Caldwell, NJ 07006
(201) 575-7052

Phillips Electronic Instruments, Inc.
85 McKee Drive
Mahwah, NJ 07430

Rupprecht & Patashnik Co., Inc.
25 Corporate Circle
Albany, NY 12203
(518) 452-0065

Sibata Scientific Technology, Ltd.
1-25, 3-chome
Ikenohata, Taito-ku
Tokyo 110, Japan
81-3(3822)2272
TTani@email.msn.com

Thermo Environmental Instruments,
Inc.
8 West Forge Parkway
Franklin, MA 02038
(508) 520-0430

U.S. EPA
National Exposure Research Laboratory
Human Exposure & Atmospheric
Sciences Division
MD-46
Research Triangle Park, NC 27711
(919) 541- 2622

Wedding and Associates, Inc.
[Refer to Thermo Environmental
Instruments, Inc.]

